

Claims

1. A double-sided pressure-sensitive adhesive tape comprising first and second sides which differ in adhesive strength, said first side comprising at least one adhesive layer comprising a pressure-sensitive adhesive based on a chemically crosslinked polyurethane, where the chemically crosslinked polyurethane is formed from starting materials comprising at least one polypropylene glycol having a molar mass of more than 1000 and a functionality of more than 2.0, in a fraction of at least 50% by weight based on a total amount of isocyanate-reactive substances used to form the chemically crosslinked polyurethane, where at least 80% by weight of other isocyanate-reactive starting materials used to form the chemically crosslinked polyurethane have a molar mass of less than or equal to 1000 and a nominal functionality of 2.0, and where a composition of the starting materials used to form the chemically crosslinked polyurethane is distinguished by a ratio of the number of isocyanate groups to the total number of isocyanate-reactive groups in said composition being between 0.8 and 1.2.
2. Double-sided pressure-sensitive adhesive according to Claim 1, wherein the ratio is between 0.9 and 1.1.
3. Double-sided pressure-sensitive adhesive according to Claim 2, wherein the ratio is between 0.95 and 1.05.
4. Double-sided pressure-sensitive adhesive tape according to Claim 1, wherein the starting materials used to form the chemically crosslinked polyurethane comprise at least one polypropylene glycol having a molar mass of more than 1000 and a functionality of more than 2.0, in a fraction of at least 60% by weight based on a total amount of isocyanate-reactive substances.
5. Double-sided pressure-sensitive adhesive tape according to Claim 4, wherein the fraction is at least 70% by weight based on the total amount of the isocyanate-reactive substances.
6. Double-sided pressure-sensitive adhesive tape comprising first and second sides which differ in adhesive strength, said first side comprising at least one adhesive layer

comprising a pressure-sensitive adhesive based on a chemically crosslinked polyurethane, where the chemically crosslinked polyurethane is formed from starting materials comprising at least one polypropylene glycol having a molar mass of less than or equal to 1000 and a functionality of more than 2.0, whose hydroxyl groups have a fraction of at least 50% of a total number of isocyanate-reactive groups, where at least 80% of other isocyanate-reactive groups of the starting materials used to form the chemically crosslinked polyurethane are carried by starting materials having a molar mass of more than 1000 and a nominal functionality of 2.0, and where a composition of the starting materials used to form the chemically crosslinked polyurethane is distinguished by a ratio of the number of isocyanate groups to the total number of isocyanate-reactive groups being between 0.8 and 1.2.

7. Double-sided pressure-sensitive adhesive tape according to Claim 6, wherein the ratio is between 0.9 and 1.1.
8. Double-sided pressure-sensitive adhesive according to Claim 7, wherein the ratio is between 0.95 and 1.05.
9. Double-sided pressure-sensitive adhesive tape according to Claim 6, wherein the starting materials used to form the chemically crosslinked polyurethane comprise at least one polypropylene glycol having a molar mass of less than or equal to 1000 and a functionality of more than 2.0, whose hydroxyl groups have a fraction of at least 60% of the total number of the isocyanate-reactive groups.
10. Double-sided pressure-sensitive adhesive tape according to Claim 9, wherein the fraction is at least 70% of the total number of isocyanate-reactive groups.
11. Double-sided pressure-sensitive adhesive tape according to Claim 1, which comprises first and second adhesive layers, and the first adhesive layer is formed of the polyurethane-based pressure-sensitive adhesive and has a lower bond strength than the second adhesive layer.
12. Double-sided pressure-sensitive adhesive tape according to Claim 6, which comprises first and second adhesive layers, and the first adhesive layer is formed of the

polyurethane-based pressure-sensitive adhesive and has a lower bond strength than the second adhesive layer.

13. Double-sided pressure-sensitive adhesive tape according to Claim 1, which comprises three or more layers, with first and second adhesive layers being applied in opposition on a backing layer, the first adhesive layer being formed of the polyurethane-based pressure-sensitive adhesive.
14. Double-sided pressure-sensitive adhesive tape according to Claim 6, which comprises three or more layers, with first and second adhesive layers being applied in opposition on a backing layer, the first adhesive layer being formed of the polyurethane-based pressure-sensitive adhesive.
15. Double-sided pressure-sensitive adhesive tape according to Claim 1, wherein the pressure-sensitive adhesive is formed from a polyisocyanate that is an aliphatic or alicyclic diisocyanate.
16. Double-sided pressure-sensitive adhesive according to Claim 15, wherein the polyisocyanate is an aliphatic or alicyclic diisocyanate of asymmetrical molecular structure.
17. Double-sided pressure-sensitive adhesive according to Claim 16, wherein the polyisocyanate is isophorone diisocyanate (IPDI).
18. Double-sided pressure-sensitive adhesive tape according to Claim 6, wherein the pressure-sensitive adhesive is formed from a polyisocyanate that is an aliphatic or alicyclic diisocyanate.
19. Double-sided pressure-sensitive adhesive according to Claim 18, wherein the polyisocyanate is an aliphatic or alicyclic diisocyanate of asymmetrical molecular structure.
20. Double-sided pressure-sensitive adhesive according to Claim 19, wherein the polyisocyanate is isophorone diisocyanate (IPDI).

21. Double-sided pressure-sensitive adhesive tape according to Claim 1, wherein the pressure-sensitive adhesive is formed from an isocyanate-reactive substance that is a polyol.
22. Double-sided pressure-sensitive adhesive tape according to Claim 21, wherein the polyol is selected from the group consisting of polyether-polyols and polyester-polyols.
23. Double-sided pressure-sensitive adhesive tape according to Claim 6, wherein the pressure-sensitive adhesive is formed from an isocyanate-reactive substance that is a polyol.
24. Double-sided pressure-sensitive adhesive tape according to Claim 23, wherein the polyol is selected from the group consisting of polyether-polyols and polyester-polyols.
25. Double-sided pressure-sensitive adhesive tape according to Claim 1, which is in the form of punched or cut shapes.
26. Double-sided pressure-sensitive adhesive tape according to Claim 6, which is in the form of punched or cut shapes.
27. Process for producing an adhesive tape according to Claim 1, said process comprising the following steps:
 - (a) charging a vessel A substantially with premixed isocyanate-reactive substances (polyol component) and a vessel B substantially with the isocyanate component, any other formulating ingredients optionally being mixed into these components beforehand;
 - (b) conveying the polyol component and the isocyanate component via precision pumps through a mixing head or mixing tube of a multi-component mixing or metering unit, where they are homogeneously mixed and so brought to reaction to form a reactive polyurethane composition;

- (c) coating the reactive polyurethane composition onto a backing material in web form which is provided with a second pressure-sensitive adhesive layer and which is optionally moving at constant speed;
 - (d) passing the backing material coated with the reactive polyurethane composition through a heating tunnel in which the polyurethane composition cures to the pressure-sensitive adhesive; and
 - (e) winding up the coated backing material in a winding station.
28. Process for producing an adhesive tape according to Claim 6, said process comprising the following steps:
- (a) charging a vessel A substantially with premixed isocyanate-reactive substances (polyol component) and a vessel B substantially with the isocyanate component, any other formulating ingredients optionally being mixed into these components beforehand;
 - (b) conveying the polyol component and the isocyanate component via precision pumps through a mixing head or mixing tube of a multi-component mixing or metering unit, where they are homogeneously mixed and so brought to reaction to form a reactive polyurethane composition;
 - (c) coating the reactive polyurethane composition onto a backing material in web form which is provided with a second pressure-sensitive adhesive layer and which is optionally moving at constant speed;
 - (d) passing the backing material coated with the reactive polyurethane composition through a heating tunnel in which the polyurethane composition cures to the pressure-sensitive adhesive; and
 - (e) winding up the coated backing material in a winding station.
29. A method comprising adhering flexible storage media to a curved, bent or creased surface with the double-sided pressure-sensitive adhesive tape according to Claim 1.

30. Method according to Claim 29, wherein the flexible storage media is selected from the group consisting of CDs, CD-ROMs and DVDs.
31. A method comprising adhering flexible storage media to a curved, bent or creased surface with the double-sided pressure-sensitive adhesive tape according to Claim 6.
32. Method according to Claim 31, wherein the flexible storage media is selected from the group consisting of CDs, CD-ROMs and DVDs.
33. A method comprising adhering a customer card or a credit card to a letter with the double-sided pressure-sensitive adhesive tape according to Claim 1.
34. A method comprising adhering a customer card or a credit card to a letter with the double-sided pressure-sensitive adhesive tape according to Claim 6.
35. A combination comprising a CD, CD-ROM, DVD, customer card or credit card and a double-sided adhesive tape according to Claim 1.
36. A combination comprising a CD, CD-ROM, DVD, customer card or credit card and a double-sided adhesive tape according to Claim 6.